

Naturally-Occurring Asbestos in El Dorado County

What is naturally-occurring asbestos and where is it found?

Asbestos is a term used for several types of naturally occurring fibrous minerals. The most common and abundant type found in El Dorado County is chrysotile, but tremolite asbestos has also been found. Both types of asbestos occur naturally in serpentine rock, but tremolite may also occur in certain other common rocks, especially near faults. Asbestos is not found in all serpentine rock or fault zones. When it does occur, it is typically present in amounts ranging from less than 1% up to about 25% of the rock volume, and in rare instances, even greater amounts. This variability can occur within the same serpentine rock outcropping.

Serpentine rock is typically grayish-green to bluish-black in color, and may have a greasy or shiny appearance. Serpentine rock is abundant in the Sierra foothills, the Klamath Mountains, and the Coast Ranges, where it is commonly exposed near faults. Faults often appear as zones in which the rocks are fractured, distorted, and displaced and may range from a few feet to a mile or more in width. Knowledge of fault locations is important because asbestos occurs most commonly where serpentine and certain other common rocks are intersected by faults. However, not all fault zones contain asbestos. On regional geologic maps, serpentine rock is often grouped by geologists with other related rocks into areas called “ultramafic rocks.” Tremolite asbestos occurs most often at the margins of areas of ultramafic rocks and where serpentine and other common rocks are intersected by faults.

The attached map of western El Dorado County, prepared by the Department of Conservation, Division of Mines and Geology, shows locations of ultramafic rock and fault zones. These are the areas where varying amounts of serpentine rock may occur. This map shows the general locations of the more significant ultramafic rock areas and faults where serpentine rock, chrysotile asbestos, and tremolite asbestos may occur, not the presence or absence of asbestos at specific sites.

How does asbestos from serpentine rocks become airborne?

One of the primary sources of airborne asbestos is from the dust generated from unpaved roads. Cars driving over unpaved roads or driveways made from crushed serpentine rock may further break up the rock and create dust that may contain asbestos fibers. Asbestos is also released when serpentine rock is broken or crushed during activities such as construction, grading, or quarrying operations. Natural weathering and erosion of serpentine rock releases asbestos fibers slowly. For example, rain may wash asbestos fibers from serpentine rock and the fibers may then be blown by the wind when the ground becomes dry. Once asbestos fibers become airborne they may stay in the air for long periods of time. Asbestos-containing dust can be blown into homes and businesses or be tracked indoors on shoes or clothes.

What are the levels of exposure to asbestos in El Dorado County?

Currently, there are only limited data on the levels of asbestos in the air that can be used to determine the exposures of people living and working in El Dorado County. Much of the County likely has

little or no airborne asbestos; however, other areas near disturbed serpentine rock such as construction sites, quarry operations, or unpaved roads and driveways surfaced with asbestos-containing serpentine rock could have elevated levels. As mentioned, activities which disturb or break serpentine rock, such as driving on unpaved roads surfaced with this rock, can cause asbestos to be released. The Air Resources Board (ARB), with the participation of the El Dorado County Air Pollution Control District, has initiated an air monitoring program to determine airborne asbestos levels in the County. During this monitoring program, asbestos levels will be measured at various locations throughout the County to better evaluate public exposures. The monitoring program will continue in the summer months to assure collection of measurements that are representative of a variety of conditions. In addition, others are independently conducting air monitoring for asbestos. All of this information will be gathered and reviewed to help us to better characterize public exposures and prioritize efforts to reduce significant exposures.

What are the health effects from exposure to asbestos?

The principal health effects that have been linked to asbestos exposure are lung cancer, asbestosis, and mesothelioma. Lung cancer is a relatively common form of cancer that has also been linked to smoking and a variety of occupational exposures. Asbestosis is a chronic, degenerative lung disease that has been primarily observed among workers in asbestos-related industries. Mesothelioma is a rare cancer of the thin membranes lining the lungs, chest, and abdominal cavity.

Some asbestos fibers can penetrate body tissues and remain in the lungs and the tissue lining the lungs and abdominal cavity. The fibers that remain in the body are thought to be responsible for asbestos-related diseases. These diseases may take decades to occur. There has been some scientific disagreement on whether certain types of asbestos are less hazardous than others. State and federal health professionals consider all types of asbestos to be hazardous.

Any exposure to asbestos involves some risk. The longer a person is exposed to asbestos and the greater the intensity of the exposure, the greater the chances for a health problem. Since the risk is related to the total exposure, exposure to low levels of asbestos for short periods of time poses minimal risk. Most of the information on health effects comes from studies of people who were regularly exposed to high levels of asbestos in the workplace. Occupational exposures are higher and much more likely to cause disease than non-occupational exposures. However, recent information indicates that asbestos-related disease can be caused by non-occupational exposures such as those resulting from the disturbance and release of asbestos into the air. Thus, the most important way to reduce asbestos risk is to reduce exposure to airborne fibers.

What can be done to reduce asbestos from being released into the air?

Unpaved roads, construction projects, quarries, and unpaved driveways are the most likely sources of airborne asbestos in and near serpentine rock areas. There are some widely-accepted control actions that, when properly applied, will reduce the release of asbestos dust. These actions include:

- wetting of surfaces during excavation and building;
- paving or sealing roads and driveways;
- rinsing construction vehicles;
- covering loads of excavated materials;

- covering exposed crushed serpentine soils with clean soils; and
- planting vegetation to reclaim disturbed serpentine rock areas.

These measures will reduce asbestos from being released by keeping the dust bound to the soil with moisture or encased by either an artificial or natural covering.

What precautions can individuals take to reduce their potential asbestos exposures?

The first action that an individual can take is to identify the location of serpentine rock on or near the property. If you are unsure whether the rock on your property is serpentine, you may consider contacting a registered geologist. Once identified, you can generally reduce your exposure by minimizing dust generation in and around your home. Some actions you may want to consider include:

- pave over unpaved walkways or roadways which contain serpentine rock and cover all finely crushed serpentine rock within residential yards with clean soil;
- pre-wet serpentine rock garden areas prior to working the soil;
- use a damp rag when dusting (as opposed to a feather duster); and
- wash vehicles that have been in direct contact with dust from crushed serpentine rock.

What requirements are in place to reduce naturally-occurring asbestos emissions?

Historically, fugitive dust and nuisance regulations have been in place to control dust from construction and quarry activities. In April 1998, the El Dorado County Board of Supervisors adopted an interim ordinance to ensure that construction activities in the County are done in a manner which minimizes the release of asbestos fibers into the air. The ordinance requires builders in serpentine areas to:

- pre-wet work areas;
- limit vehicle access and speed;
- cover areas exposed to vehicle travel with non-asbestos material;
- maintain high moisture conditions or apply a “binder” to seal fibers of disturbed surfaces or stockpiles; and
- provide employee notification of potential exposures and risk.

The El Dorado County Board of Supervisors has directed the Director of Environmental Management to ensure compliance with this ordinance throughout the County.

In addition, if asbestos is suspected in a work area, the federal and California Occupational Safety and Health Administrations have regulations to protect workers. Basically, the regulations require air monitoring to determine if asbestos concentrations exceed certain levels. If the levels are exceeded, steps to eliminate or mitigate the asbestos hazards are required. These rules do not apply to workers in mines or mills, which are regulated under the federal Mine Safety and Health Administration.

Also, the El Dorado County Air Pollution Control District implemented an existing ARB control measure, which became effective in 1991, that prohibits the use of serpentine material for surfacing

applications if it contains greater than 5% asbestos. This regulation also includes requirements that quarry operators test for the asbestos content of serpentine rock sold for surfacing purposes.

What other actions are being taken?

A Task Force of public officials and state and local agencies has been set up to address the issue of naturally-occurring asbestos in El Dorado County. This Task Force is currently identifying issues related to asbestos exposure, facilitating testing to determine airborne levels, and developing methods to assess overall potential risk to residents of the County. The information generated will better assist State and local agencies in taking appropriate steps to safeguard public health statewide. Further measures for reducing exposure to asbestos which can be taken by individuals and public agencies will also be examined.

Who can I call for further information?

This document is a brief summary based on generally available information and existing knowledge of the issues related to naturally-occurring asbestos in El Dorado County. As more information becomes available, additional releases may be prepared.

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Where can I get more information?

This paper, as well as additional links to asbestos related sites, can be accessed electronically at:
www.arb.ca.gov/toxics/asbestos.htm






Additional information will soon be available on the California Environmental Protection Agency Hotline at: 1-800-CLEANUP (253-2687)

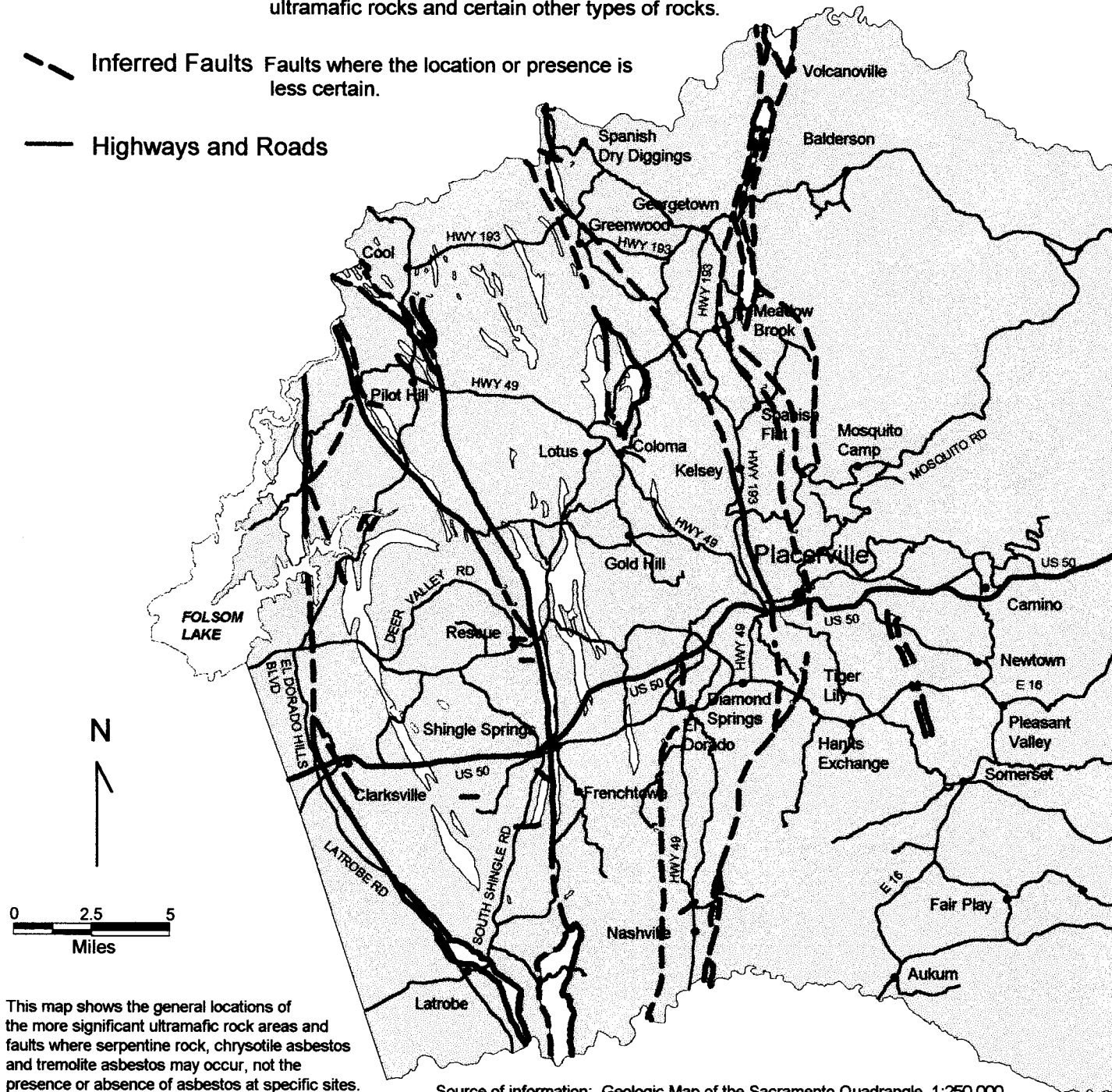
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LOCATIONS OF ULTRAMAFIC ROCKS AND FAULTS IN EL DORADO COUNTY WHERE SERPENTINE ROCK AND ASBESTOS MAY OCCUR

-  **Ultramafic Rocks** Areas containing serpentine rock and related rock types; chrysotile and tremolite asbestos may be present, particularly near faults.
-  **Non-Ultramafic Rocks** May contain areas of ultramafic rocks too small to show on this map or not included on the source map.
-  **Known Faults** Zones of rock fracturing and displacement, from a few feet to a mile or more wide in some locations. Tremolite asbestos is most likely to occur where faults intersect ultramafic rocks and certain other types of rocks.
-  **Inferred Faults** Faults where the location or presence is less certain.
-  **Highways and Roads**



This map shows the general locations of the more significant ultramafic rock areas and faults where serpentine rock, chrysotile asbestos and tremolite asbestos may occur, not the presence or absence of asbestos at specific sites.

Source of information: Geologic Map of the Sacramento Quadrangle, 1:250,000 scale, Department of Conservation, Division of Mines and Geology, 1981.